TRIPLETT

INSTRUCTION MANUAL

MODEL 6028

DIGITAL V-O-M

SAFETY NOTICE

Electricity can be dangerous. Observe good safety practice when making measurements on electrical circuits.

Never touch any exposed energized electrical circuit since contact may cause burns or produce lethal electrical currents.

Before making any measurement with the V.O.M. make sure that the switches and test leads are all in their proper locations for the function and range desired.

Never make a range or a function change in the V.O.M. while connected in or to a live circuit.

When measuring high voltages special additional precautions are necessary. Turn off the power before connecting the test probes. Make sure that any capacitors in the circuit are discharged. If no voltage is present, clip the test probes to the circuit. Arrange the V.O.M. and test leads to be clear of grounds, etc.

Turn on the power, and make your reading. Do not handle or touch the V.O.M., test leads or probes while the power source is on. Turn off the power - observe the meter to see that it has returned to "Zero", before removing the probes from the circuit.

CAUTION - In High Power circuit areas such as distribution transformers, dangerous arcs of explosive nature can occur if the circuit is shorted. A V.O.M. switched to a current or low ohm range, when it should be on a voltage range could be the cause of an explosive short. *Always be sure that the V.O.M. is set up for the correct function and range before attempting any measurement.*

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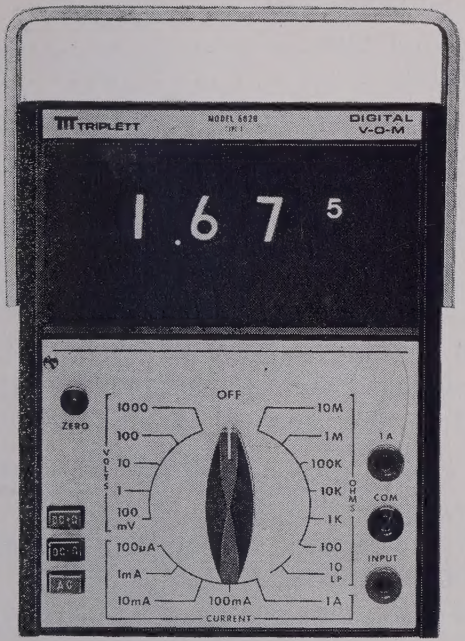

MODEL 6028 DIGITAL V-O-M

FIG. 1

TRIPLETT CORPORATION

BLUFFTON, OHIO

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SPECIFICATIONS

DC VOLTAGE

Ranges:
100 mV., 1, 10, 100, 1000 volts DC full scale

Accuracy (at 25°C ±1°C):
.25% RDG ±½ digit on 100 mV and 1 V ranges
.35% RDG ±½ digit on 10 V, 100 V and 1000 V ranges

Temperature Coefficient (0-40°C):
±.025% Reading/°C

Input Resistance:
9.404 M Ω±1% on all ranges

Normal Mode Rejection:
Greater than 25 db at 60 Hz

Common Mode Rejection:
Greater than 80 db

Overrange:
100% on all ranges except 1000 V range where overrange is 10%

Full Scale Step Response:
2 seconds nominal

Overload Protection:
225 VAC or DC max. on 100 mV and 1 V ranges
1100 VAC or DC max. on all other ranges

AC VOLTAGE

Type of Response:
Average sensing RMS calibrated

Ranges:
100 mV, 1, 10, 100, 1000 volts AC full scale

Accuracy (at 23°C ±1°C):

Range	Frequency	Accuracy
100 mV — 100 V	40 Hz — 10 KHz	.5% RDG ±½ Dig
	10 KHz — 20 KHz	2% RDG ±½ Dig
1000 V	40 Hz — 500 Hz	.75% RDG ±½ Dig

Temperature Coefficient (0-40°C):
±.05% Reading /°C

Input Impedance:
9.404 MΩ±1% shunted by less than 100 Pf

Overrange:
100% on all ranges except 1000 V range where 1000 volts is maximum

Full Scale Step Response:
5 seconds nominal

Overload Protection:
Linear between 220 V at 60 Hz and 60 V. at 10 KHz on 100 mV and 1 V ranges
1100 volts on all other ranges

RESISTANCE

Ranges:
10 LP, 100, 1 K, 10 K, 100 K, 1 Meg, 10 Meg

Accuracy (at 23°C ±1°C):
.5% of Reading ±½ digit on all ranges except 10 Meg where accuracy is 1% ±½ digit

Temperature Coefficient (0-40°C):
±.035% Reading /°C

Overrange:
100% on all ranges

Full Scale Step Response:
2 seconds on all ranges except 10 Meg where response is 10 seconds nominal

Voltage Across Resistor Under Test:
1 volt at full scale on all ranges except 10 Ω where the voltage is 100 mV at full scale; thus, 10 Ω range measurements are called Low Power measurements

Test Current:

10 Ω range — 10 mA	100 K Ω range — 10 uA
100 Ω range — 10 mA	1 M Ω range — 1 uA
1 K Ω range — 1 mA	10 M Ω range — 100 nA
10 K Ω range — 100 uA	

Overload Protection:

1000 V maximum input. Negative polarity is protected by 125 mA fuse

CURRENT, AC and DC

Ranges:

100 uA, 1 mA, 10 mA, 100 mA, 1 A

Accuracy (at 23°C ±1°C):

AC: 1% Reading ±½ Digit from 40 Hz to 10 KHz

DC: .5% Reading ±½ Digit on all ranges except 1 A where accuracy is .75% Reading ±½ Digit

Temperature Coefficient (0-40°C)

AC: .05% Reading /°C

DC: .035% Reading /°C

Overrange:

100% on all ranges

Full Scale Step Response:

AC: 5 seconds nominal

DC: 2 seconds nominal

Voltage Drop Across Input:

100 mV DC and RMS AC at full scale

Overload Protection:

100 uA, 1 mA, and 10 mA are fused at 125 mA

100 mA is fused at 2 A

1 A is not fused but has separate input

READOUT DISPLAY

Two cold cathode gas discharge display tubes.

Three neon bulbs indicating 0, 5 half digit and 1 overrange digit.

A movable decimal point.

All numbers displayed simultaneously indicates out of range.

Soft glow with only 0 displayed in the half digit indicates wrong polarity.

INPUTS

The black input terminal is common for all measurements. For measurements on the 1A range the terminal marked "1A" should be used for positive input. On all other ranges the terminal marked input should be used as the positive input. All external parts of the instrument are floating with respect to earth ground. The common input may be operated up to 1000 volts above the power line ground.

ACCESSORIES

Leather Carrying Case.

Rechargeable Battery Pack.

High Voltage Probe.

POWER REQUIREMENTS

105 - 125 VAC, 6 Hz, 4 watts.

PHYSICAL CHARACTERISTICS

The case is made of black molded high impact plastic which provides a high degree of mechanical strength along with light weight. This makes the instrument very attractive for field use. The metal handle can be used to support the instrument at about a 25° angle with horizontal.

Case dimensions are $6\frac{1}{2}$" H x $5\frac{1}{8}$" W x 3 3/16" D

Weight approximately 4 pounds.

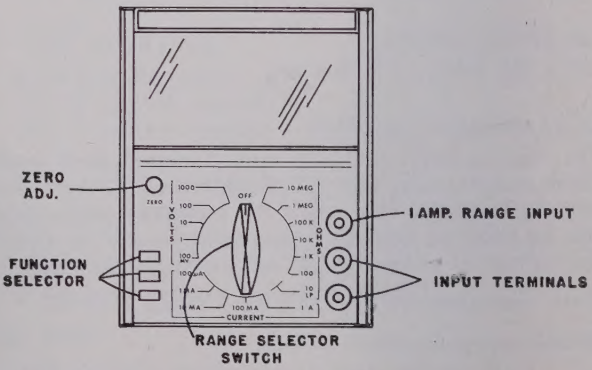
GENERAL DESCRIPTION

The Triplett Model 6028 Digital V-O-M is a 2¾ digit instrument featuring 100% overrange (1995 max.), out of range indication, and reverse polarity indication. The Model 6028 is capable of precision measurements of AC or DC voltage and AC or DC current as well as resistance measurements.

The instrument is housed in a black molded high impact plastic case which provides structural strength along with light weight and quality appearance. The back is easily removed providing easy access to the four circuit boards.

A front panel zero adjust is provided to zero out lead resistance in the low resistance ranges and to correct for any other zero shift that may occur.

The basic measuring circuit consists of a 100 millivolt 2¾ digit DC voltmeter utilizing the single slope analog to digital conversion technique. All ranges and functions are converted to a DC level in this range for measurement by this circuit.



FRONT PANEL CONTROLS
FIG. 2

OPERATING INSTRUCTIONS

GENERAL

The Model 6028 V-O-M is designed for use on 105 to 125 VAC, 50-60 Hz.

The power switch is located on the rotary selector switch, the unit being off when the pointer is straight up. The instrument should be allowed to warm up for 2 minutes prior to use in order to obtain greatest accuracy.

Input polarity reversal is achieved by front panel pushbutton switches in order to facilitate checking forward and reverse conduction of a diode junction.

Out of range indication is provided by a blurred display with the "1" on continuously. Negative polarity indication is provided by a soft glowing display with "1" off and only the "0" displayed in the half digit.

DC VOLTAGE MEASUREMENT

1. Depress the function button marked DC +Ω or DC −Ω depending on the expected polarity.
2. Rotate the range selector switch into the VOLTS arc to the 100 mV range, and short the input lead to common. The zero control should be adjusted approximately midway between the reverse polarity indication and 00.5.
3. Rotate the range selector switch to a range equal to or higher than the expected voltage to be measured. Connect the test leads to the DC source to be measured. Turn the range selector switch to the lowest range which will yield a reading without out-of-range indication occurring. The instrument will read up to 1995 accurately.

4. Floating measurements may be made up to 1000 volts above power line ground. Exceeding this limit may result in damage to the instrument.

5. The 10 megohm input resistance of the instrument contributes negligible loading in most measurements. However, if the source resistance is 20 kilo ohms or greater, and a high degree of reading accuracy is required, then the loading effect of the instrument must be taken into account.

AC VOLTAGE MEASUREMENT

1. Depress the function button marked AC.

2. Rotate the range selector switch into the VOLTS arc to the 100 mV range, and short the input lead to common. The zero control should be adjusted approximately midway between the reverse polarity indication and 00.5.

3. Rotate the range selector switch to a range equal to or higher than the expected voltage to be measured. Connect the test leads to the AC source to be measured. Turn the range selector switch to the lowest range which will yield a reading without out-of-range indication occuring. The instrument will read up to 1995 accurately. The reading is equal to the RMS value of a sinusoidal voltage under measurement.

4. If a DC component is present the instrument will display only the AC component. A DC component of up to 225 volts is permissible on the 100 mV and 1 Volt ranges while a 1000 volt DC component is permissible on all other ranges.

5. The 10 megohm and 100 pf input impedance of the instrument contributes negligible loading in most measurements. However, if the source impedance is high

and a high degree of accuracy is desired then the loading effect of the instrument must be taken into account.

CURRENT MEASUREMENT

1. For DC current measurement depress the function button marked DC +Ω or DC —Ω depending on the polarity expected. For AC current measurement depress the function button marked AC.

2. Rotate the range selector switch into the CURRENT arc to the 100 mA range and short the input lead to common. The zero control should be adjusted approximately midway between the reverse polarity indication and 00.5.

3. If the current to be measured is less than 200 mA connect the test leads to the source to be measured and turn the range selector to the lowest range which will yield a reading without out of range indication occurring. The instrument will read up to 1995 accurately. AC readings are equal to the RMS value of a sinusoidal current under measurement.

4. If the current to be measured is between 200 mA and 2 A, connect the input lead to the 1 A input and connect the leads to the source to be measured.

5. Floating measurements may be made up to 1000 volts above power line ground. Exceeding this limit may result in damage to the instrument.

6. The current ranges are fused as follows: 100 uA, 1 mA, 10 mA - 125 mA fuse; 100 mA - 2 A fuse; 1 A - no fuse. Should the current range protection fuse open, it must be replaced before measurements on most ranges or functions can be made. See Calibration and Maintenance Section for fuse replacement procedure.

7. The voltage drop across the input terminals is 100 mV

at full scale reading on any current range.

RESISTANCE MEASUREMENT

1. Depress the function button marked DC+Ω.
2. Check zero as described in step 2 of DC Voltage Measurement.
3. Rotate the range selector switch into the OHMS arc to the range equal to or higher than the expected resistance to be measured.
4. Connect test leads across the resistance to be measured. Turn the range selector switch to the lowest resistance range which will yield a reading without out of range indication occurring. The instrument will read to 1995 accurately.
5. The use of shielded leads may be necessary for measurements of 1 M Ω or higher due to hum pickup in the test leads.
6. Due to the 50 milliohm resolution on the 10 OHM range, a reading of a few counts may be indicated with shorted test leads due to lead resistance. This reading should be subtracted from all readings taken on the 10 OHM range, or the front panel zero adjustment may be used to zero the reading on this range. The zero adjustment must then be readjusted for other ranges.
7. The 10 OHM through 10 MEGOHM resistance ranges are inherently protected from application of positive external voltage up to 1000 volts and fused against application of negative current over 125 mA.
8. The front panel polarity reversing buttons are provided for easy checking of forward and reverse conduction of diode junctions.

9. The 100 Ω through 10 megohm ranges apply 1 volt at full scale across the device under test. This allows forward conduction of a silicon diode to be checked. The 10 Ω range applies .1 volt at full scale across the device under test.

THEORY OF OPERATION

GENERAL

The heart of the Model 6028 Digital V-O-M is a 100 mV digital readout DC voltmeter utilizing the single slope analog to digital conversion technique with 100% overrange capability (1995 max.). Out of range indication is provided by a blurred display with the "1" on continuously. Negative polarity indication is provided by a soft glowing display with the "1" off and only the "0" displayed in the half digit. Measurements on all ranges and functions are converted to a DC level which is measured by this circuit.

The following paragraphs present a detailed discussion of the theory of operation of the DC voltmeter and the various conversion circuits.

DETAILED CIRCUIT DESCRIPTION

1. DC Voltmeter

   The DC Voltmeter uses a single slope integration technique to convert an unknown input voltage to a digital number. The procedure involves generating a stair step ramp of precisely known voltage steps. This ramp is compared to the input voltage and when they are equal the number of steps is displayed on the readout tubes.

   a. The analog to digital converter consists of transistors Q313 through Q322 which control the resistive ladder network R339 through R354 which increases the ramp

D. C. VOLTMETER FUNCTIONAL BLOCK DIAGRAM — FIG. 3

in ½ millivolt steps with each count out of the clock circuit. The 100 mV step is calibrated with R352.

b. The comparator (QA305) compares the ramp with the input voltage. When the ramp level is less than the input level the output of the comparator is positive which allows the clock circuit to run. When the ramp level just surpasses the input level the output of the comparator goes negative which turns off the clock circuit.

c. The clock circuit (Q311 and Q312) is controlled by Q310. When the comparator output is positive, Q310 is turned off allowing the clock to run. When the comparator output is negative, Q310 is saturated; thus, Q311 is turned off.

d. The counters (QA301 through QA304) are driven by the clock output. With each clock output the analog to digital converter ramp is increased by ½ millivolt. When the output of the comparator goes negative and the clock is stopped the counters hold the count until display time.

e. The display tubes are turned on during each positive half cycle of the power line. When CR301 is forward biased by a positive half cycle the display tubes will conduct and read the number that has been stored in the counters from the last ramp.

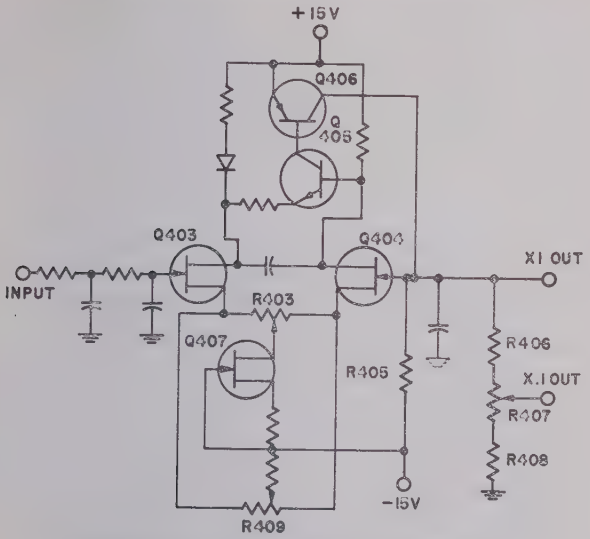
f. The reset circuit (Q307 through Q309) is activated by the power line zero crossing

in the negative direction. This monostable circuit provides an output pulse which resets the counters and the wrong polarity circuit.

g. The wrong polarity indicating circuit (Q203, Q204 and Q323) is a bistable latch which removes supply voltage from the cold cathode gas discharge display tube drivers (QA201 and QA202) at the time a reset pulse occurs. At such time as the output of the comparator goes positive, power is applied to the drivers until the next reset pulse occurs thus allowing normal operation of the tubes. Removing the supply voltage from the drivers results in a soft glow in the tube when voltage is applied to its anode.

2. Impedance Converter

The impedance converter (See Fig. 4) is a discrete operational amplifier with the gates of Q403 and Q404 as the non-inverting and inverting inputs respectively. The output is at the junction of Q406 collector and R405. Negative feedback is accomplished by connecting the output to the inverting input. This yields a voltage gain of unity with very low output impedance. R403 is an internal zero adjustment to correct for unbalance in the FET's. R409 is the front panel zero adjustment. The output can be attenuated 10 times with no zero offset by using the resistive divider network R406-R408. This gives the effect of having an instrument with two basic ranges. R407 allows calibration of this 10X voltage divider network.



IMPEDANCE CONVERTER SCHEMATIC
FIG. 4

3. Input Attenuator

The purpose of the input attenuator is to scale input voltages to a level compatible with the basic measuring circuitry. The attenuator is composed of a frequency compensated 9.404 megohm precision voltage divider. R114 allows calibration of the first voltage tap. Frequency compensation is accomplished with the capacitive divide network C211-C213. C211 allows calibration of this network on the first voltage tap.

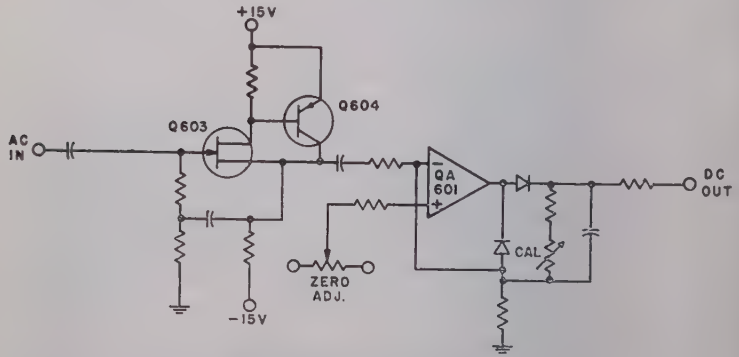
4. Current Shunts

Current is converted to a voltage by shunting the input of the instrument with one of five precision shunt re-

sistors selected by the range switch. The voltage drop across the shunt resistor drives the DC voltmeter or the AC voltmeter depending upon the function selected. The 100 uA - 10 mA ranges are protected by a 125 mA fuse (F102). The 100 mA range is protected by a 2 A fuse. The 1 A range is protected by a separate input.

5. AC Converter

The AC converter accepts an AC input and converts it to a DC level equal to the RMS value of the sine wave input. The AC converter is made up of a bootstrapped FET buffer (Q603 and Q604) followed by an operational rectifier (QA601, CR601, CR602). The buffer provides a high input impedance unity gain driver circuit for the operational rectifier circuit. QA601 is connected as an inverting amplifier operated in the current mode with diode CR601 and CR602 in the feedback loop. This rectifier circuit has a forward drop of about 30 uV rather than the .6 V normally obtained with silicon diodes. This permits low voltage measurements to be



AC CONVERTER SCHEMATIC — FIG. 5

made with high accuracy. The output is therefore a one half wave rectification of the input. This is fed to a low pass filter network which provides an average responding output. R608 allows the AC converter to be zeroed after the DC measuring circuitry has been zeroed. R615 provides for calibration at the 1 volt level.

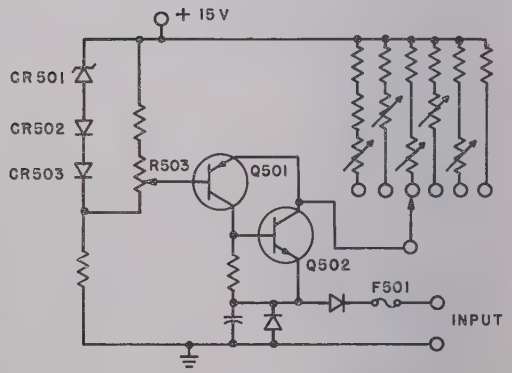
6. Ohms Converter

The ohms converter is a constant current source whose output is current programmable in decade steps depending on the range selected. This constant current flows in the test leads and through the resistance under test. The voltage across the resistance under test then drives the basic DC voltmeter. The ohms converter constant current source is composed of regulating transistors Q501 and Q502, and a voltage reference zener diode CR501. Q501 regulates the current through its emitter resistor (R505-R510 depending on range selected) such that a constant voltage appears across the resistor. This insures a constant current through the emitter resistor which flows in Q501 collector circuit, then through the resistor under test. The test current for each range is given below:

Range	Test Current
10 LP	10 mA
100 Ω	10 mA
1 K	1 mA
10 K	100 uA
100 K	10 uA
1 M	1 uA
10 M	100 nA

Transistor Q502 begins to turn on when the collector current in Q501 surpasses approximately 10 uA. This

permits good tracking with temperature between the base-emitter junction of Q501 and diodes CR502 and CR503 on all ohms ranges. The voltage reference is adjustable to yield a 10 mA current through R510 (100Ω range). All other emitter resistors are trimmed to yield proper test currents according to the above table with resistors R511-R515. The ohms converter circuit is protected against the application of external voltages by F501 and diodes CR504 and CR505. If positive voltage is applied, CR505 becomes reverse biased and protects the circuit up to 1000 volts. If negative voltage is applied CR504 and CR505 become forward biased to clamp the emitter of Q502 at —.6 volts while fuse F501 limits current to 125 mA.



OHMS CONVERTER SCHEMATIC

FIG. 6

7. Regulated Power Supply

The regulated power supply (Q301 through Q306) provides +15, —15 and +16 V. The voltage reference is obtained from Q306 which is utilized as a zener diode. The differential pair (Q304 and Q305) compares the +16 V output to the voltage reference and provides thermal tracking. Q301 is a series regulator which, when combined with CR305, provides the +15 V output. This removes current requirements of the rest of circuitry from the +16 V supply which operates the analog to digital converter. The floating ground is obtained by using Q302 as a series regulator; thus, all current which is drawn between the +15 V supply and common is re-returned through the series regulator. The instrument is zeroed by adjusting R314 and calibrated at 99.5 mV by adjusting R311.

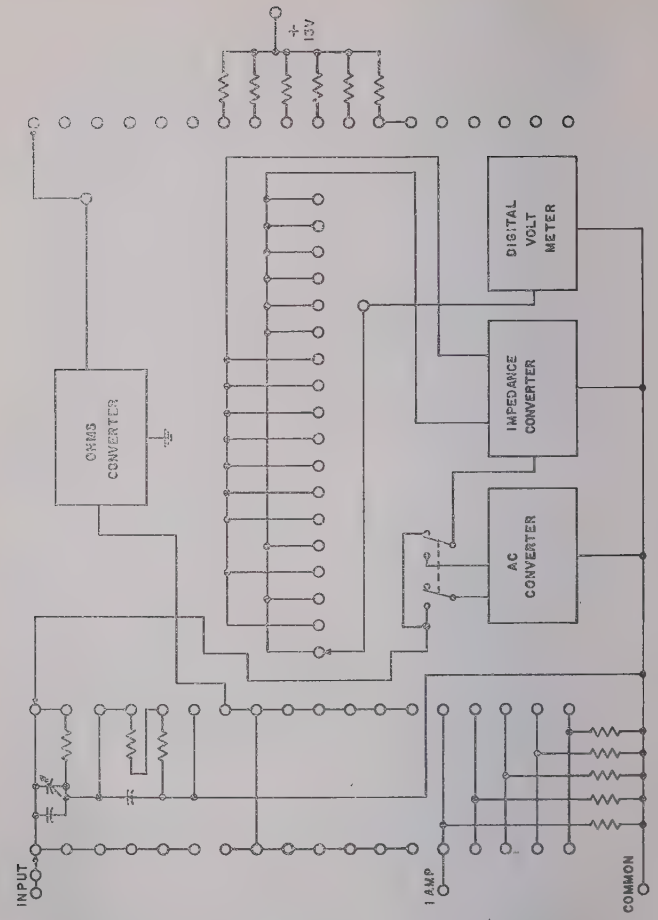
V-O-M FUNCTIONAL DESCRIPTION (See Fig 7)

1. Voltage Measurement

For a voltage measurement the range selector switch SW101 section c, connects the input terminal to the top of the input attenuator while section d selects the proper tap depending on the range chosen. The scaled voltage is fed to the input of the impedance converter or the input of the AC converter depending on the position of the AC button.

2. Resistance Measurement

For resistance measurements the range selector switch, section c, connects the input terminal to the constant current output of the ohms converter, thereby passing a constant current through the resistance under test. Section d connects the input of the impedance converter across the resistance under test so that it reads voltage across the resistance under test. Section e selects



DIGITAL V-O-M FUNCTIONAL BLOCK DIAGRAM
FIG. 7

the 1 volt basic sensitivity for the instrument; therefore, forward resistance of a diode can be measured on all ranges except 10 ohms. On the 10 ohm range the basic sensitivity is changed to 100 mV. Section f programs the ohms converter for the proper test current for each ohms range.

3. Current Measurement

   For current measurements the range selector switch, section c, connects the input terminal to one of the five current shunts depending on the range selected. The voltage across the current shunt is fed to the input of the impedance converter or to the input of the AC converter, depending on the position of the AC push button switch. Section e selects the 100 mV basic sensitivity for all current ranges.

4. Decimal Positioning

   The decimal point is automatically positioned as the range selector switch is rotated. The appropriate decimal is supplied power by section b.

CALIBRATION AND MAINTENANCE

FUSE REPLACEMENT

Fuses are accessible by removing the back cover. This is done by loosening the hand nut in the center of the back.

The power line is fused by an 8AG .5A fuse located near the power transformer.

The current shunt protection fuses are located on the small PC board mounted on the selector switch. F101 is a 2 A picofuse and F102 is a 1/8 A picofuse. See component layout inside back cover of this manual.

The ohms converter protection fuse is located in the lower right cor-

ner of the large PC board. This is a 1/8 A picofuse. See component layout inside back cover of this manual.

Spare fuses are located in a small plastic container inside the instrument.

PERFORMANCE CHECK

The performance outlined in this section will reveal whether or not recalibration is necessary. The instrument should be allowed to warm up for at least 2 minutes prior to checking performance as outlined in the performance check chart.

The following equipment is necessary for the performance check.

1. DC Voltage Standard
   Ranges: 100.0 mV, 1.000 VDC and 10.00 VDC
   Accuracy: ±.025%
2. AC Voltage Standard
   Ranges: 100.0 mV, 1.000 V and 10.00 V
   Frequency: 1 KHz to 10 KHz
   Accuracy: ±.05%
3. Resistance Standard
   Ranges: 100.0 Ω to 10.00 MΩ IN DECADE STEPS
   Accuracy: ±.05%
4. DC Current Standard
   Ranges: 100.0 uA to 1A IN DECADE STEPS
   Accuracy: ±.05%
5. AC Current Standard
   Ranges: 100.0 uA to 1A IN DECADE STEPS
   Frequency: 1 KHz
   Accuracy: ±.1%

CALIBRATION

The Model 6028 is factory calibrated and should not require adjustment other than zeroing with the front panel control. Should the unit fail to yield results within the limits specified in the perform-

PERFORMANCE CHECK CHART

Tester Section To Be Checked	Tester Control Settings		Input Applied	Allowable Readings
	Function	Range		
Impedance Conv. Zero	DC+Ω	100 mV	Short	00.0 (using front panel adjustment)
Basic DVM Zero	DC+Ω	1 V	Short	00.0
Basic DVM F.S.	DC+Ω	100 mV	99.5 mV	99.0-100.0
Basic DVM O.R.	DC+Ω	100 mV	199.0 mV	198.5-199.5
Impedance Converter Attenuator	DC+Ω	1 V	1.000 V	.995-1.005
Input Attenuator	DC+Ω	10 V	10.00 V	9.90-10.10
Resistance	DC+Ω	100 Ω	100 Ω ±.05%	99.0-101.0
Resistance	DC+Ω	1 K	1 K ±.05%	.990-1.010
Resistance	DC+Ω	10 K	10 K ±.05%	9.90-10.10
Resistance	DC+Ω	100 K	100 K ±.05%	99.0-101.0
Resistance	DC+Ω	1 M	1 M ±.05%	.990-1.010
Resistance	DC+Ω	10 M	10 M ±.05%	9.85-10.15
AC Converter	AC	100 mV	Short	00.0
AC Converter	AC	1 V	1.000 V @ 1 KHz	99.0-101.0
Frequency Compensation	AC	10 V	10.00 V @ 10 KHz	9.90-10.10

CALIBRATION CONTROL LOCATION — FIG. 8

ance check the following calibration procedure should be used. Allow a minimum of 30 minutes warm-up before performing the calibration. Adjustments should be made in the order described as any given adjustment may be dependent on previous adjustments.

1. DC Voltage

The range selector switch should be on the 100 mV range with the DC+Ω button depressed.

a. Basic DVM Zero Preset

Pad number three on the main PC Board should be shorted to common. R314 should be adjusted until the readout is 00.0.

b. Impedance Converter Zero Preset

The input terminal should be shorted to common. The front panel zero adjust should be set at 2/3 of its rotation beginning at the counterclockwise stop. R403 should be adjusted until the readout is 00.0.

c. Basic DVM Zero

The selector switch should be moved to the 1 volt range and the input connected to a 2.5 mV source. R314 should be adjusted right on the switch point between .000 and .005.

d. Impedance Converter Zero

The selector switch should be moved to 100 mV range and the input connected to a .25 mV source. The front panel zero control should be adjusted right on the switch point between 00.0 and 00.5. This step (d) should be used anytime a precise front panel zero setting is desired.

e. Full Scale Calibration

The input should be connected to a 99.25 mV ± .025% source. Adjust R311 until the reading is right on the switch point between 99.0 and 99.5.

f. Overrange Calibration

The input should be connected to a 199.25 mV ± .025% source. Adjust R352 until the readout is right on the switch point between 199.0 and 199.5.

g. Impedance Converter Calibration

The selector switch should be moved to the 1 V range, and the input connected to a .9925 V ± .025% source. Adjust R407 until the reading is right on the switch point between .990 and .995.

h. Input Attenuator Calibration

The selector switch should be moved to the 10 V range, and the input connected to a 9.925 ± .025% source. Adjust R102 until the reading is right on the switch point between 9.90 and 9.95.

2. AC Voltage

a. AC Converter Zero

The selector switch should be moved to the 100 mV range, and the AC button depressed. The input terminal should be shorted to common. R608 should be adjusted until the readout is 00.0.

b. AC Converter Calibration

The selector switch should be moved to the 1 V range, and the input connected to

a sine wave source whose frequency is 1 KHz and magnitude is 1 V RMS ± .05%. R615 should be adjusted until the readout is 1.000.

c. Frequency Compensation

The selector switch should be moved to the 10 V range, and the input connected to a sine wave source whose frequency is 10 KHz, and magnitude is 10 V RMS ± .05%. C102 should be adjusted until the readout is 1.000.

3. Resistance Ranges

Calibration of the 10 ohm range is completely dependent upon calibration of the 100 ohm range and there is no separate adjustment to be made. Calibration of the 1 K - 10 meg ranges also depends upon proper calibration of the 100 ohm range. Calibration of the resistance ranges is not dependent upon a calibration of AC voltage circuitry (CALIBRATION Section 2).

a. 100 Ohm Range

The selector switch should be moved to the 100 ohm position, and the DC +Ω button depressed. The input should be connected to a 100 ohm ± .05% resistor, and R503 adjusted until the readout is 100.0.

b. 1 K Range

The selector switch should be moved to the 1 K position, and the input connected to a 1 K ± .05% resistor. R515 should be adjusted until the readout is 1.000.

c. 10 K Range

The selector switch should be moved to the 10 K position, and the input connected to a 10 K ± .05% resistor. R514 should be adjusted until the readout is 10.00.

d. 100 K Range

The selector switch should be moved to the 100 K position, and the input connected to a 100 K ± .05% resistor. R513 should be adjusted until the readout is 100.0.

e. 1 MEG range

The selector switch should be moved to the 1 MEG position, and the input connected to a 1 MEG ± .05% resistor. R512 should be adjusted until the readout is 1.000.

f. 10 MEG Range

The selector switch should be moved to the 10 MEG position, and the input connected to a 10 MEG ± .05% resistor. R511 should be adjusted until the readout is 10.00.

DISASSEMBLY

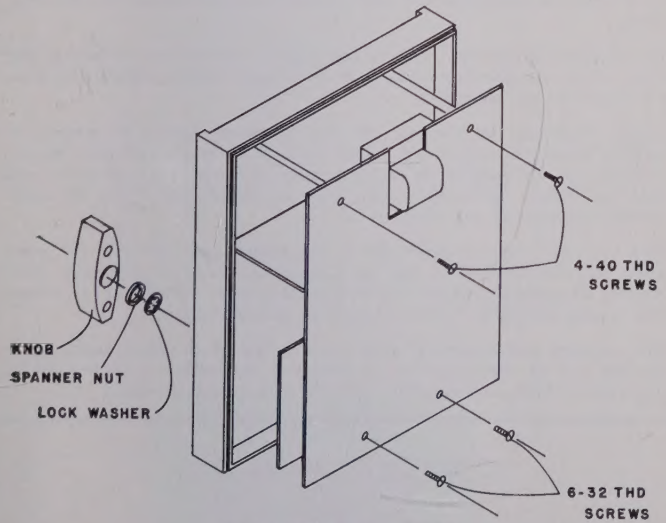
Should it be desired for any reason to remove the circuit boards from the front panel the following procedure may be used.

1. Remove the back as described in the Calibration and Maintenance Section.
2. Remove the four mounting screws securing the large PC board. See Fig 9.

3. Carefully fold the PC board to the right side while viewing from the rear.
4. Remove the selector knob. Using a $1/2$" spanner tool remove the switch retaining nut through the front panel.
5. Carefully slip the entire rotary switch assembly out of the front panel and fold the assembly to the right while viewing from the rear.

One can now have access to all components and the unit is still in electrical operating condition.

Reassembly is accomplished by following the above steps in reverse.



DISASSEMBLY VIEW
FIG. 9

WARRANTY

The Triplett Corporation warrants instruments manufactured by it to be free from defective material or factory workmanship and agrees to repair or replace such instruments which under normal use and service, disclose the defect to be the fault of our manufacturing. Our obligation under this warranty is limited to repairing or replacing any instrument or test equipment which proves to be defective, when returned to us transportation prepaid, within ninety (90) days from the date of original purchase.

This warranty does not apply to any of our products which have been repaired or altered by unauthorized persons or service stations in any way so as, in our judgment to injure their stability or reliability or which have been subject to misuse, negligence or accident or which have had the serial number altered, effaced, or removed. Neither does this warranty apply to any of our products, which have been connected, installed, or adjusted otherwise than in accordance with the instructions furnished by us. Accessories including all vacuum tubes and batteries not of our manufacture used with this product are not covered by this warranty.

The Triplett Corporation reserves the right to discontinue models at any time, or change specifications, price or design, without notice and without incurring any obligation.

Upon acceptance of this material the purchaser agrees to assume all liability for any damages, and bodily injury which may result from the use or misuse of the material by the purchaser, his employees, or others and that the Triplett Corporation shall incur no liability for direct or consequential damage of any kind.

Parts will be made available for a maximum period of five (5) years after the manufacture of this equipment has been discontinued. Parts include all materials, charts, instructions, diagrams, accessories, et cetera, which were furnished in the standard or special models.

This warranty and conditions of sale are in lieu of all others expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

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